



# SMOKE SIGNAL BROADCASTING

6304 Yucca • Hollywood, CA 90028 (213) 462-5652

## OCTOBER '78 COMPUTER PRODUCT CATALOG

*What's in store for  
the computer of tomorrow  
is in stock at Smoke Signal today.*



# Introduction

When Smoke Signal Broadcasting, (founded in 1973 to provide engineering and technical consulting services) began investigating microprocessors to meet the needs of their customers, they discovered the 6800 proved to be far superior to the 8080 microprocessors.

A decision was made early in 1976 to support the 6800 microprocessor with a product line expanding into the microcomputer market.

Since then, Smoke Signal has assembled one of the industry's most creative teams to take advantage of the 6800's versatility. The decision has proven to be a good one as the 6800 microprocessor has found its way into a wide variety of hobby, control and business systems.

In every application, users report the 6800 is the most reliable and easy to use microprocessor available. From this catalog you will be able to choose products from high quality memory boards to fully tested and complete micro-systems. Smoke Signal's engineering efforts not only include hardware but software support as well.

Smoke Signal has committed itself to provide the most reliable product line in the microcomputer industry today. Every Smoke Signal product is supported through our world-wide system of dealers and factory customer services.

Take the time now to read the rest of this catalog — you may find exactly what you need.

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# Foreign Computer Dealers

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5087 Australia  
Alex Risticx 61-8-267-3991  
Dynetics Pty. Ltd  
425 Pennant Hills Rd.  
Pennant Hills  
NSW 2120 Australia  
011-61-2-848-9055  
Mr. D.N. Horton

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1060 Brussels-Belgium  
02-538-90-93  
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## Edmont Alberta, Canada 5TN 3N3

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(204) 944-1448

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250 W. Bway  
Victoria, B.C. V5Y 1P5  
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Hampshire RG25 1NN Eng  
Robert Smith

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Northwood, Middlesex Eng.  
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358 Blk. 114  
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Schellingstr. 33  
089-28-28-92

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2331 Vosendorf  
AM Petersbach, 2 Austria

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Mesa, Arizona 85202  
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Santa Ana, CA 92705  
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Santa Clara, CA 95051  
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Hayward, CA 94541  
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Lawndale, CA 90260  
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Computerware  
656 Lomas De Oro  
Olivenhain, CA 92024  
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Sunnyvale, CA 94086  
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Lakeport, CA 95453  
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(303) 761-6232  
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(305) 896-4322  
Jim Walton

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Forest Hurst

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The Country Computer Store  
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W. Lafayette, IN 47906  
(317) 447-5917

Syscon International  
1239 S. Bend Ave.  
South Bend, IN 46617  
(219) 287-5916

Microwave Systems  
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Des Moines, Iowa 50304  
(515) 265-6121 Tom Callahan

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Rockville, MD 20852  
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Tom Harmon

Technology Applications  
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Gaithersburg, MD 20760  
(301) 840-1480  
Brower Murphy

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American Use Computers  
712 Beacon St.  
Boston, MA 02215  
(617) 216-1100

Computer Mart  
1097 Lexington St.  
Waltham, MA 02154  
(617) 899-4540  
John Dunning

## MINNESOTA

Computer Depot  
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Minneapolis MN 55435  
(612) 927-5601 Fred Larsen

## MISSOURI

Computer Workshop  
of Kansas City 4027 N. Oak St.  
Kansas City, MO 64118  
(816) 452-3690

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2607 E. Charleston  
Las Vegas, NV 89104

(702) 384-3354

Bob Johnson

## NEW JERSEY

Business Computer Services  
510 Nectar Ave.  
Pinehurst, N.J. 08201  
(609) 652-1448

Computer Corner of N. J.  
240 Wanaque Ave.  
Pompton Lakes, N. J. 07442  
(201) 835-7080 Dave Brody

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118 Madison Ave.  
New York, N.Y. 10016  
(212) 686-7923 Stan Viet

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6465 Transit Rd.  
E. Amherst N.Y. 14051 (Mail)  
234 Tennyson Terrace  
Williamsville, N.Y. 14221  
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Data Processing  
Albuquerque, N.M. 87110  
(505) 265-6042  
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1213 Hillsborough  
Raleigh, N.C. 27605  
(919) 833-0210 Tim Collins

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Ashville, N.C. 28803  
(704) 274-4774  
Ralph Roberts

## Corral Corp.

Sky City Shopping Center  
Hendersonville, N.C. 28737  
(707) 693-0466 David Cox

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Matthews N.C. 28105  
Source One Corp.  
Oakwood Shopping Center  
Rocky Mt. N.C. 27801  
(919) 977-2485 Mike Wood

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Fairfield, Ohio 45014  
(513) 874-0111  
Ralph Hodges

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3698 Franklin Blvd.  
Eugene, Oregon 97403  
(503) 726-7613  
Stephen Moe

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York, PA 17404  
(717) 854-0481

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Pittsburgh, PA 15237  
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Al Flaite

## Ripley's

215 Cow Path  
Sauderton, PA 18964  
Marketlines Systems  
2337 Philmont Ave.  
Huntington Valley, PA 19006  
(215) 947-6670  
Marv Rogers

## SOUTH CAROLINA

Byte Shop  
1920 Blossom St.  
Columbia, S.C. 29205  
(803) 771-7824  
Nick Johnson

## TEXAS

Comp Center 2  
900 Old Koenig Lane  
Austin, Texas 78746  
(512) 453-5129  
Computer Port  
926 N. Collins  
Arlington, Texas 76011  
(817) 469-1502  
Phil Dorcas

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Dallas, TX 75247  
(214) 634-7870  
Bryon Kirkwood

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San Juan, TX 78589  
(512) 787-8454 Ray Scott

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& Systems Services  
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Corpus Christi, TX 78411  
(512) 855-4516 Mr. L. Persels

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McLenn, VA 22101  
(703) 821-8333  
Charles Suit

## Computer Workshop of VA.

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Springfield, VA 22151  
Joe Gahn

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Seattle, WA 98199  
(206) 285-7265  
Kay Gjerding

## Yakima Computer Store

4503 Mountain View Rd.  
Yakima, WA 98901  
(509) 452-3298  
Dave Prim

## WISCONSIN

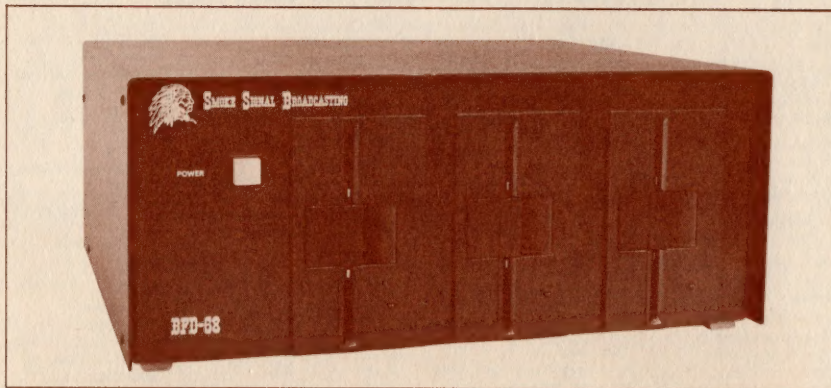
The Battery Shop  
2241 S. 38th St.  
Milwaukee, WI 53215  
(414) 384-5410

## Milwaukee Computer Store

6916 W. N. Ave.  
Milwaukee, WI 53213  
(414) 259-9140  
Dennis Hoffman

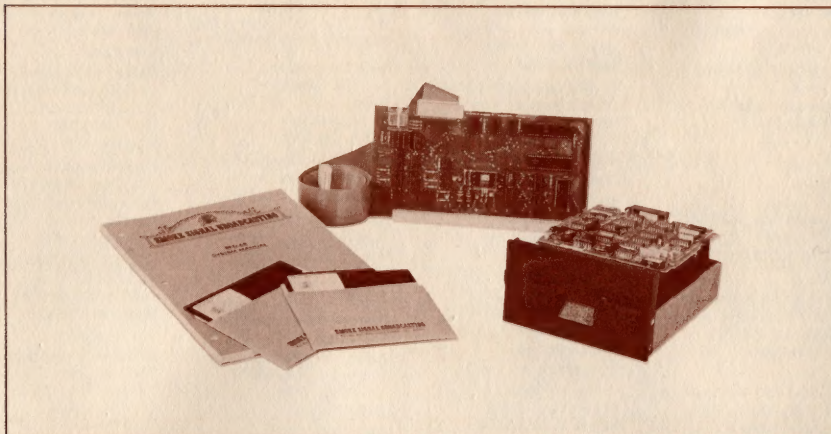


## BFD-68



Smoke Signal's BFD-68 is a mini-floppy disk system with hardware and software designed specifically for use with 6800 based microcomputer systems. The controller is designed to fit into a regular 50 pin position on an SS-50 motherboard. Both the cabinet and power supply for the BFD-68 are designed to accommodate up to three drives with each additional drive being added at any time. Each drive has the capability of storing up to 80K bytes of data. The BFD-68 is also available in two additional configurations: the dual drive system BFD-68-2 and the triple drive system, BFD-68-3.

## ABFD-68



The ABFD-68 system is exactly the same as the BFD-68 but without the cabinet and power supply. The ABFD-68 comes with all the software that is included with the BFD-68 system. Each of the disk drives, used with the ABFD-68 requires 12 volts at 1.1 amps average with a surge capability of 1.7 amps and 5 volts at 0.5 amps.

## LFD-68



Users that require at least 500K of online data storage will find the LFD-68 floppy system fits the bill. This system uses standard 8 inch floppies to provide this increased capability. Its controller board is identical to the BFD-68 mini-floppy disk series controller board and fits into a 50 pin position on the SS-50 motherboard. The controller provides the capability of supporting up to four 8 inch drives for a maximum system capacity of over 1 megabyte of online storage. This system is complete with system software and available in two configurations. The LFD-68, a one drive system or the LFD-68-2, a two drive system.

## DFD-68-2

For those users with database requirements larger than the BFD-68 and LFD-68 series, Smoke Signal offers the DFD-68-2 floppy disk system. This system uses the identical cabinet, power supply and controller card that is used with the LFD-68 system. The DFD-68-2 system has two 8 inch double sided floppy disk drives with 512K bytes of storage per drive and complete system software.



## Disk Software

The entire series of floppy disk systems is supplied with Smoke Signal's Disk Operating System, DOS-68 and Disk File Basic - DFB-68.

DOS-68, a powerful disk operating system, is conveniently loaded into 4K of memory at \$7000 (optionally at \$D000) by a boot routine resident in PROM on the controller board. DOS-68 gives the user the ability to easily create or modify the operating system commands to suit specific needs. This versatility allows for newly developed software to be installed on the users system.

DOS-68 is supplied with the following commands:

COMMAND NAME	FUNCTION
LIST	List the disk file directory
SAVE	Save memory into a file
GET*	Load a binary object file into memory
GETH	Load a hex formatted object file
RUN*	Load a file into memory and bgin execution
DELETE	Remove a file from a disk
RENAME	Change the name of a file
APPEND	Merges two files together to form one file
PRINT	Print the contents of a file
COPY	Allows files to be copied from disk to disk
SDC	Single disk drive copy
LINK	Set up information to boot the monitor
INSTAL	Convert object file to a command file
REMOVE	Convert a command file to an object file
FIND	Type load address information
VIEW	Type contents of an editor text file
CLOSE*	Close all open files
EXIT*	Exit to other resident monitor
ASYS	Assign system disk
FORMAT	Format a blank disk

(\* indicates a memory resident command)

DOS-68 allows access to the disk file management subsystem thereby making it easy for the programmer using assembly language to perform operations on disk files. Routines are available for such functions as: creating or deleting sequential or random files, reading or writing to files, renaming files, appending files, and reading the disk directory. Through the use of the file management system, the user can easily access as many or as few files as desired at any time.

## Disk Software (Cont.)

Smoke Signal Broadcasting's Disk File Basic, DFB-68, allows the user not only to save and load basic files to disk, but also to read from and write to data files without having to program in assembly language. DFB-68 contains the following instructions:

### DFB-68 Disk File Basic

COMMANDS **Used In Direct Mode**	FUNCTIONS	STATEMENTS **Used In Programs**	DISK COMMANDS
APPEND	ABS	DATA	OPEN
CHAIN	ASC	DIM	CLOSE
CONT	ATAN	END	RESTORE
DIGITS	CHR\$	FOR-NEXT	SCRATCH
HOME	COS	GOSUB	FLIST
LINE	DEF	GOTO	DOS
LIST	EXP	IF-THEN	READ
LJUST	INT	INPUT	WRITE
LOAD	LEFT\$	LET	STATUS
MON	LEN	ON GOSUB	FDEL
NEW	LOG	ON GOTO	FREN
PORT	MID\$	PRINT	
SIZE	IMOD	READ	
RJUST	PEEK	REM	
RUN	PI	RESTORE	
SAVE	POS	RETURN	
SKIP	RIGHT\$	STOP	
STRING	RND		
TLOAD	SGN		
TPEND	SIN		
TRACE	SQR		
TSAVE	STR\$		
WAIT	TAB		
BASE	TAN		
	USER		
	VAL		

## TD-1 Trace Disassembler

TD-1 provides a means of program debugging for 6800 users by providing interactive tracing and disassembly capabilities.

The TRACE mode allows the programmer to control the execution of the program under test so that the processor's internal registers and memory may be examined on an instruction-by-instruction basis. In this manner, the programmer may view intermediate results during program execution in order to be able to determine where the program is not functioning properly.

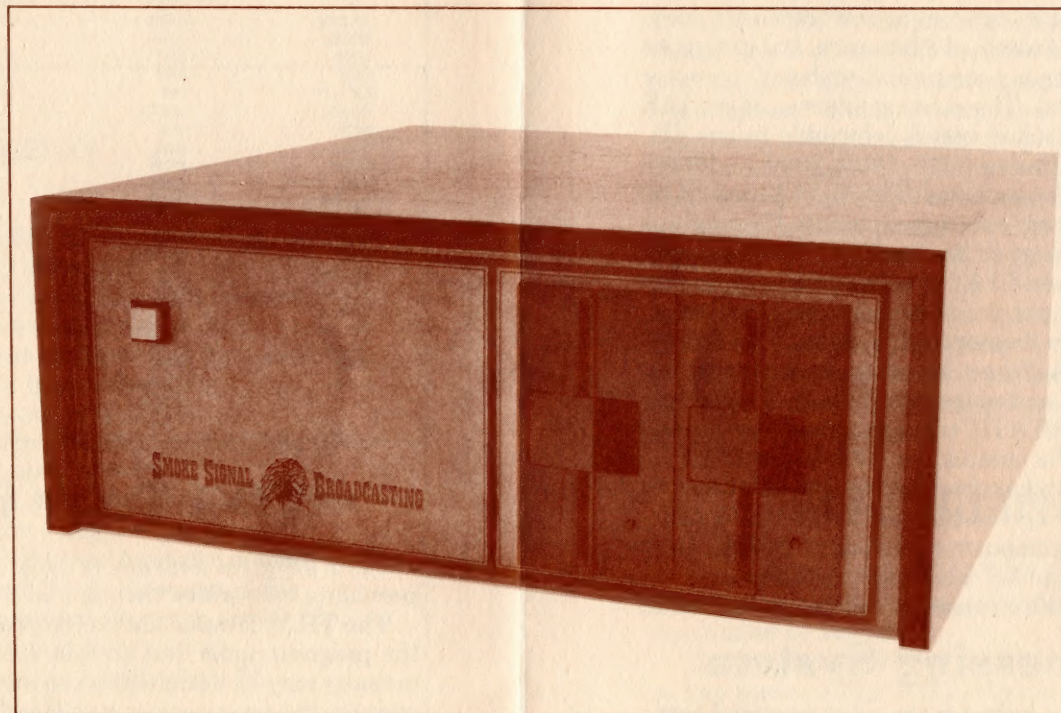
The DISASSEMBLY mode converts the harder to remember machine code back to the more easily read mnemonics so that the programmer can look through memory as if looking at an assembly listing.

In trace mode, all registers are printed along with the disassembly of the next instruction to be executed. The contents of the register or memory may be changed at any time. A subroutine may be executed with the trace printout suppressed. The test program can be run up to a specified address when it is desired to execute many instructions at one time. Execution of the current instruction may be suppressed when it is desired to skip the execution of that instruction. This is particularly useful for skipping over branch instructions when the branch normally would be taken.



# CHIEFTAIN Microcomputers

The CHIEFTAIN microcomputer systems are the newest entrant into the Smoke Signal product line. These systems are truly cost effective when compared to other 6800 based microcomputers. They surpass the capabilities that, until now, were found only in 8080 and Z-80 based systems. The CHIEFTAIN makes use of the most reliable connector technology and motherboard design available in the industry. State of the art designed and well engineered, this new system is housed in a stylish leather grain cabinet suitable for home or office use.



## CHIEFTAIN I Microcomputer

The CHIEFTAIN I microcomputer system is a complete system including: cabinet and power supply, nine slot motherboard, containing the baud rate generator, gold molex pins, processor board, 32K static memory, two serial I/O ports, two 5.25-inch floppy disk drives as well as DOS-68 and DFB-68 systems software. To insure high reliability the system is completely burned-in and tested.

## CHIEFTAIN II Microcomputer

If the CHIEFTAIN I isn't enough, then the CHIEFTAIN II will more than meet almost any user's needs. This system is the same as the CHIEFTAIN I except for the expanded disk capability. The CHIEFTAIN II comes equipped with two 8-inch single-sided disks for increased storage capacity.



## M-16A

### Storage Capacity

16384 bytes

### Access Time:

250 nsec typical, 450 max.

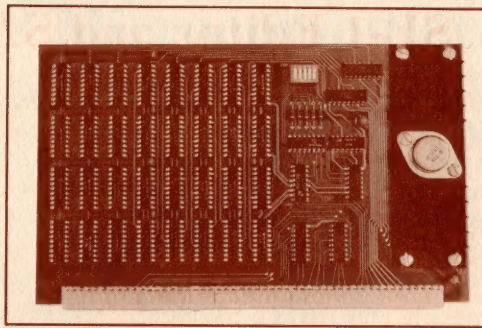
### Input Voltage:

7.5 volts min., 10 volts max.

### Input Current:

1.6 amps typical

Shipping Weight: 2 lbs.



Smoke Signal's M-16A is a STATIC random access memory system with a total storage capacity of 16384 words of 8 bits each. It is contained on a 5½ by 9 inch circuit board and is plug compatible with any computer system using the SS-50 bus standard. The starting address of the 16K memory block occupied by the M-16A is switch selectable to any 4K starting address. (HEX starting addresses 0000, 1000, 2000 . . . F000). A hardware write protect switch is also included. The M-16A uses 4K by 1 STATIC memory chips as the system's storage elements. These chips use the same proven reliable technology as the familiar 2102 but store 4 times as much in only 12% more space. STATIC memory has a relatively constant current demand and does not produce the large transient current spikes prevalent in dynamic memory chips. Also, STATIC memory will accommodate all DMA (Direct Memory Access) schemes. DMA is used in some disk systems and video boards as well as certain multi-user applications. Thus, with STATIC memory, you do not have to worry about whether or not it will be compatible with future DMA applications or whether the current spikes produced by dynamic memory will glitch your system. The typical access time of the M-16A is fast enough to work with a 6800 based computer operating at 2 MHz. Over the entire temperature range of 08 to 70° and under worst-case conditions, the M-16A will operate with a computer running at 1.25 MHz.

## TP-1 Text Processing System

The SSB Text Processing System is by far the most powerful text formatter available to the micro user. Over 50 commands are provided for easy paging, margin setting and spacing. Right, left, right and left as well as center justification modes are all handled. the SSB Text Processor is actually a formatting language allowing the creation of macros including variables. All of these features provide for very efficient footnote handling, special document preparation, and form letters.

Other features supported include page numbering (either Arabic or Roman Numerals), complete page size control (line length, page length, top, bottom, left and right margins, etc.), tabs, conditional formatting control, exact title placing, contiguous space and text control, plus much, much more.

The TP-1 Text Processor in conjunction with the SE-1 Text Editor will give your micro the powers of the best text processing system available.

## SE-1 Editor and SA-1 Assembler

The SE-1 Text Editing System is both line oriented and content oriented in that specific lines can be referenced by a particular line number, an offset amount or by a string of characters contained within the line. Such commands as PRINT, INSET, DELETE, FIND, REPLACE and VERIFY are included. The current line pointer always points to the beginning of a line. There is automatic line numbering and the line numbers may be turned on or off as desired. Pointer movers include TOP, BOTTOM and NEXT. Other features are TAB column set and character definition, OVERLAY, APPEND, HEADER and block MOVE or COPY. An extensive CHANGE command allows one to change any or all specific occurrences of one string into another. ZONES may be set to allow column restriction of all string searches and replacements. Multiple commands per line are permitted and most commands are global in that they can operate over the entire part of the file that is contained in memory. The editor edits files from the BFD-68 disk system. The NEW command allows editing files from the disk that are larger than the available RAM memory space. Thus, the size of the edited file is restricted only by the storage capacity of the disk.

SA-1 is an assembler using Motorola standard mnemonics for the 6800 microprocessor designed to operate with the Smoke Signal Broadcasting's Disk Operating System.

SA-1 reads input disk source files created by the companion SE-1 text editor and generates formatted program listings and object files for use on the BFD-68 system.

## SG-1 Source Generator

The SOURCE GENERATOR (SOURCE GEN) is a program for the disassembly of object code into source code which may then be directly assembled or edited.

The output of SOURCE GEN can be directed to tape or disk in one of two forms: either SWTPCo's co-resident assembler format or the Smoke Signal Broadcasting's Text Editing system format. SOURCE GEN, after the disassembly, will report on the terminal the number of bytes in the source code file, the number of external labels, the number of local labels and the number of variables in order to facilitate computing the amount of memory space necessary to assemble the source code generated.

### Significant features:

Labels referencing data are flagged with the letter "D".

Labels referencing program jumps or branches are flagged by the letter "L".

Labels referencing locations external to the region being disassembled are flagged with the letter "E".

Labels referencing variables are flagged with the letter "V".

The operator can tell SG-1 where to expect known data (constants) or variables to prevent confusion of data with instructions.

The source code generated can be output to a disk file, terminal, cassette tape or printer.



# Basic Compiler

The BASIC compiler was designed to be a programming tool in the building of high-performance process control programs and production business applications.

Some of the BASIC compiler's features are:



- 1) Faster execution since syntax analysis of the line is not performed each time the line is executed. Also, automatic integer optimization on arithmetic, FOR/NEXT loops and subscripting gives an added boost to speed.
- 2) More power in the runtime package since no room is needed for statement analysis, program editing and listing. This leaves more room for string operations, floating point, file I/O, formatted output and more.
- 3) A wider variety of facilities are made possible by the compiler: such as nested conditions, IF-THEN-ELSE and others.
- 4) Decimal floating point for business applications. Accuracy to a minimum of 9 digits; dollar values up to \$99,999,999.99.
- 5) PRINT USING for formatted output.
- 6) Multicharacter variable names which simplify program coding and maintenance.
- 7) Single and double-dimensioned numeric arrays
- 8) Character strings and string operations (substring, length, concatenation).
- 9) Runtime error diagnostics by line number.
- 10) Compile time error diagnostics point to actual error.
- 11) Assembly language interface via "CALL" statement.
- 12) File I/O to ASCII and binary files.
- 13) Data initialization facility.

## DATA TYPES

9 Digit Floating Point  
16 Bit Positive Integers  
Hex Numbers  
Character Strings to  
65534 Characters  
Numeric Vectors  
Numeric Arrays  
Byte Vectors

## FORMATTED OUTPUT

Money Format - Floating Dollar/Trailing  
Minus  
Exponential Format  
Formatted Numbers Available as Strings  
(numf\$)

## SIZE: (IN BYTES)

Compiler requires 16K  
Runtime Package 12K  
16K Machine Runs 225 Line Basic Program  
32K Machine Runs 1100 Line Basic Program

# Smartbug

SMARTBUG is a 1024 byte monitor program which may be used in most systems using the Motorola 6800 microprocessor. It was designed primarily to replace the MIKBUG ROM used in many systems including the Southwest Technical Products 6800 microcomputer. It can also be used to replace the SWTBUG ROM for owners of systems using that monitor who wish to upgrade their systems. SMARTBUG is the only monitor that is really MIKBUG compatible. Not only were all the important MIKBUG entry locations maintained, but most of the relatively obscure ones were maintained as well. More importantly, the RAM temporary storage locations were also maintained at the MIKBUG locations. SMARTBUG contains many enhancements not contained in MIKBUG. Perhaps the most important one is the trace feature contained in SMARTBUG. TRACE allows the user to single step through a program, examine the registers if desired. Program debugging proceeds very quickly when the TRACE feature is used in conjunction with BREAKPOINT.

## SMARTBUG COMMANDS

- "A" Displays contents of A register and allows changes if desired.  
"B" Displays contents of B register and allows changes if desired.  
"C" Displays contents of Condition Code Register and allows changes if desired.  
"D" Jumps to BFD-68 disk operating system when system has previously been loaded into memory.  
"E" Turns ECHO on. Echoes all characters input through INEEE input routine.  
"G" Go to location contained in A048 and A049.  
"H" HARDCOPY turns on flag which sends output from OUTEEE to a jump location where the user can install a routine to print on a hardcopy printer to direct the output to either the CRT, the printer or both.  
"T" INSERT a byte into a range of memory. Useful for clearing memory or setting to 3F.  
"J" Jump to program starting at location entered after "J"  
"K" Insert breakpoint and execute program until breakpoint encountered  
Breakpoint automatically cleared.  
"L" LOAD from cassette tape.  
"M" Examine and change MEMORY  
"N" NO-ECHO allows entry of characters through INEEE without echoing the characters out through OUTEEE.  
"P" PUNCH outputs to cassette tape  
"Q" QUICKSTART boots in the BFD-68 operating system  
"R" Displays contents of all registers.  
"T" TRACE provides a means to single step through a user program  
"X" Displays contents of Index register and allows changes if if desired.  
"4" Jumps to E400 where user may install additional monitor commands.



## Price List

ABFD-68 .....	Single Drive Disk System, Less cabinet and power supply. Includes DOS-68-Disk Operating System, and DFB-68-Disk File Basic .....	\$ 649.00
BFD-68 .....	Complete Single Drive System, including DOS-68 and DFB-68, controller, cabinet and power supply. ....	\$ 795.00
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